This guidance document provides information to property owners who want to plant around their existing stormwater management pond.

A Montgomery County Owner's Guide To Adding Plantings Around Your Stormwater Pond

This guide answers the following questions as well as provides examples and additional resources:

Why?   Why should I add plantings?

Where?   Where am I allowed to plant?

What?   What should I plant?

How?   How should I plant?

   Planted pond example

Stormwater ponds help clean polluted water that runs off land, paved surfaces, and roofs before slowly releasing it into our streams. Pollutants include, but are not limited to, fertilizer from nearby landscaped areas, bacteria, metals, or oil drips from vehicles. Plants can uptake these pollutants, keeping them out of our streams.

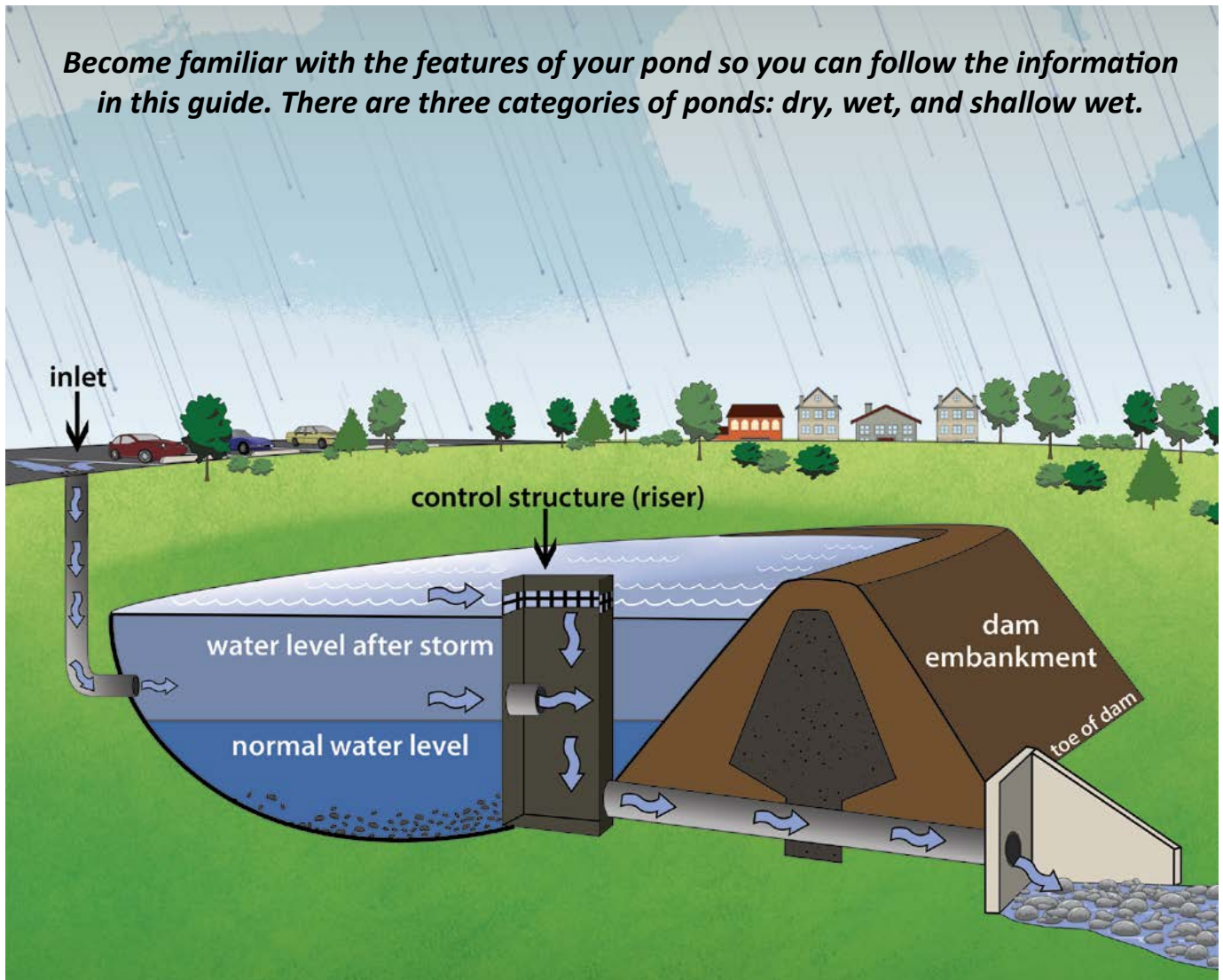As plants mature, some roots grow longer and some decay, leaving "root channels" or holes. These channels increase the soil's permeability.

Adding plants around your pond provides these benefits:

- Cleans the water
- Slows down and soaks up stormwater runoff
- Provides habitat and cooler water for aquatic life
- Increases soil strength and stability with deep roots
- Enhances visual appeal

The components of wet and dry ponds

Where?
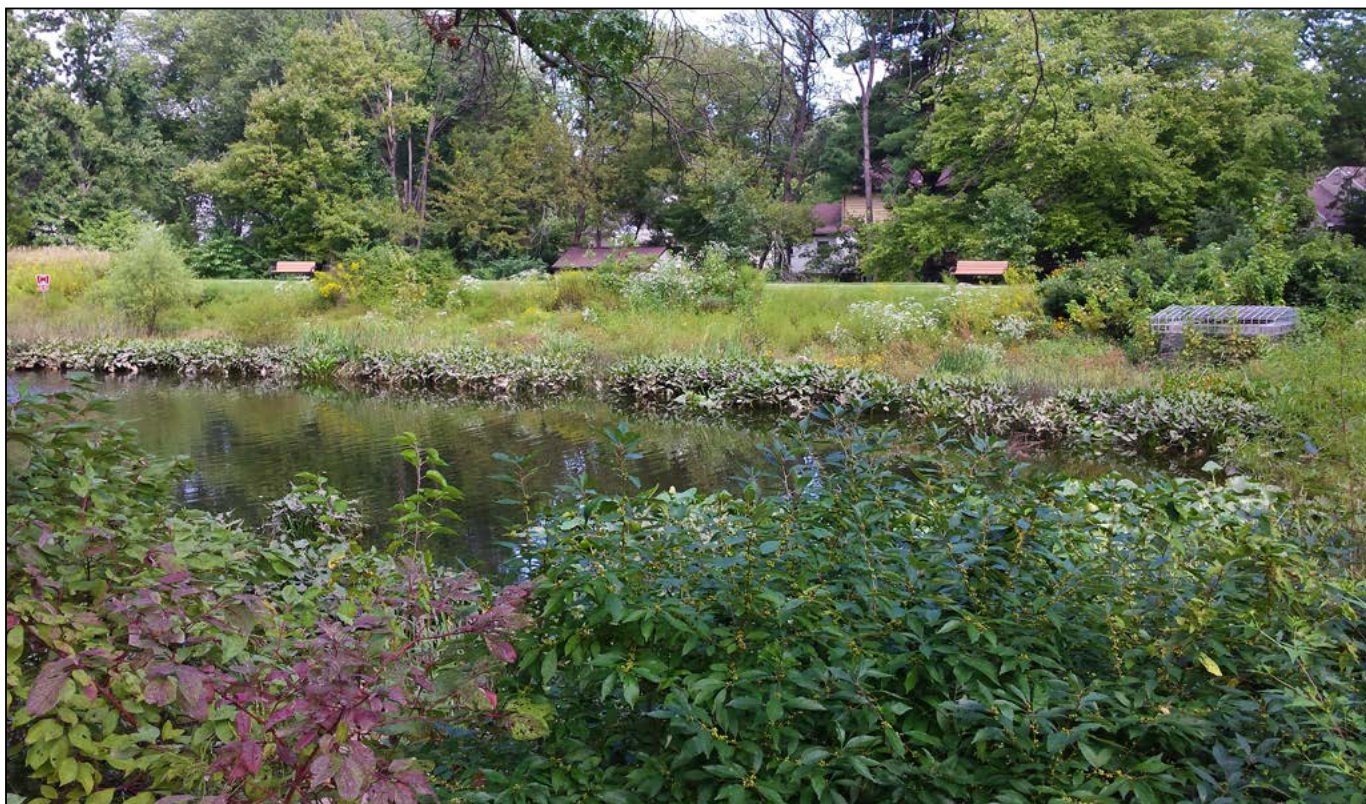
Become familiar with the features of your pond so you can follow the information in this guide. There are three categories of ponds: dry, wet, and shallow wet.

inlet
control structure (riser)
water level after storm
normal water level
dam embankment
toe of dam

Cross-section of a wet pond

Before you plan:

Contact the Montgomery County Department of Environmental Protection (DEP).
DEP can confirm the location of the inspection/maintenance access area, determine the water ponding level, and establish the planting limits around dams and embankments. Reach us at AskDEP@montgomerycountymd.gov

Before you plant:

- Call "Miss Utility" at 1-800-257-7777 or submit online requests at http://www.missutility.net
- Plant trees and shrubs at least 3 feet away from marked underground utilities.
- Plant large trees at least 10 feet away from main overhead utility wires.

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General guidance

- All tops of embankments, side slopes, as well as the bottom of dry ponds must be vegetated (with no bare exposed soil) to prevent erosion. Certain areas (around the control structure, dam embankment, and inlet and outlet areas) should only have turfgrass or meadow plants that can be mowed regularly.

- Vegetation around embankments must be kept low to the ground so the embankments can be inspected and so any disturbance, such as holes from groundhogs, can be seen and corrected.

- Plantings must not block or divert the flow of water into or through the pond.

- All ponds must have an access area for mowing and maintenance vehicles. This access area must be kept clear and mowed.

Plants in ponds may be temporary!

Your pond is a permitted stormwater management facility that may require maintenance and repairs that could damage plants.

If the pond needs to be dredged, or other maintenance or repairs are required, plants may be removed.

Please Note:

Contractors are not expected to replace plants damaged during the performance of structural maintenance or repairs on ponds. Think carefully about where you plant them and ask DEP to review your plan for areas most vulnerable to damage during repairs.

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Planting Dos and Don'ts

Don't Plant Trees or Shrubs in These Places	Do Plant Native Non-Woody Plants Here

Around the control structure, inlets, and outlets

Do not plant trees or shrubs on dam embankments or within 15 feet of the toe (bottom) of the embankment, or within 25 feet of the riser or other structures.

Dam embankment

Only plant turf grass on the pond side of the embankment. The pond dam embankment is required to be mowed at least twice a year. No decorative rocks or structures may be placed on an embankment (rip rap shorelines designed for erosion control may be the exception).
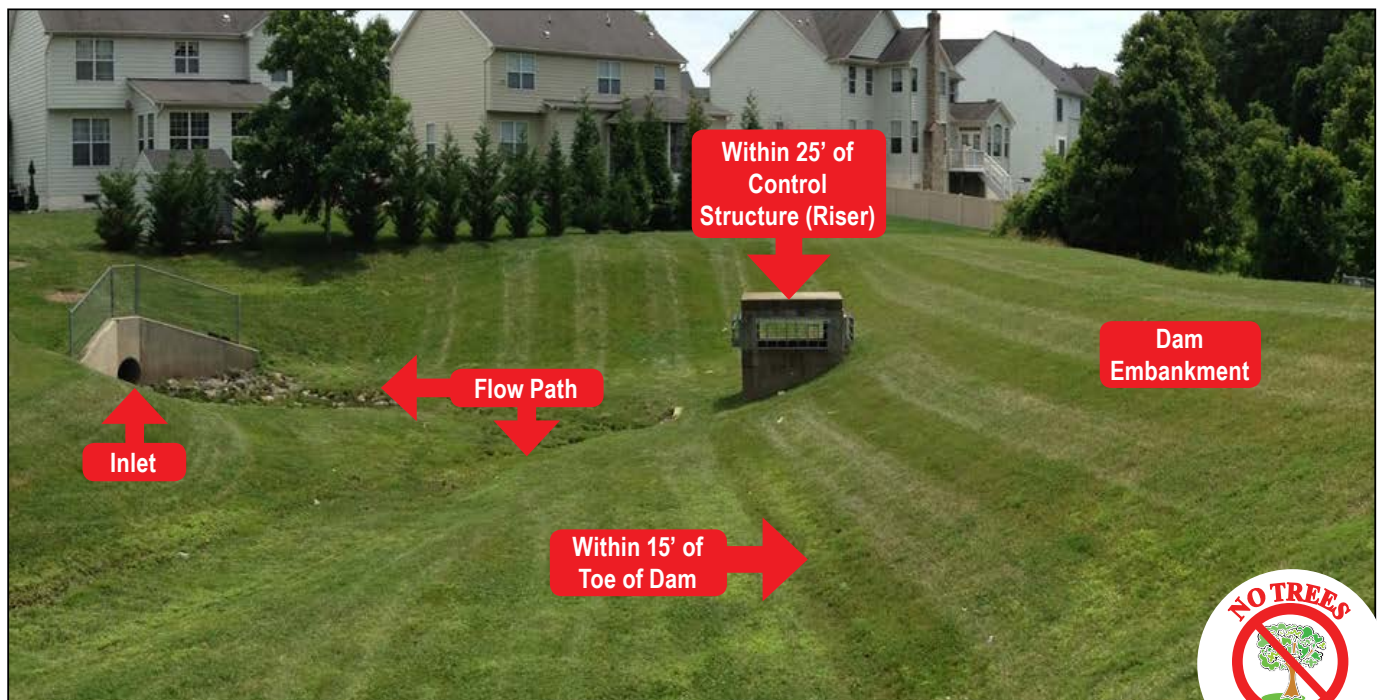
Pond side slopes (outside of the dam embankment)

Plant lower areas with plants tolerant of frequent flooding. Plants used in higher areas should be tolerant of less frequent flooding and drier conditions.

If planting below the flooding elevation, don't use mulch, as it will wash away during storms.

Refer to the drawing of a planted dry pond on page 12 to visualize what a pond might look like when it is well planted.

Within 25' of Control Structure (Riser)

Dam Embankment

Flow Path

Inlet

Within 15' of Toe of Dam

NO TREES ON DAMS

Areas shown in red are off-limits for trees and shrubs.
Native grasses may be planted on dam embankment, which must be mowed twice-a-year.

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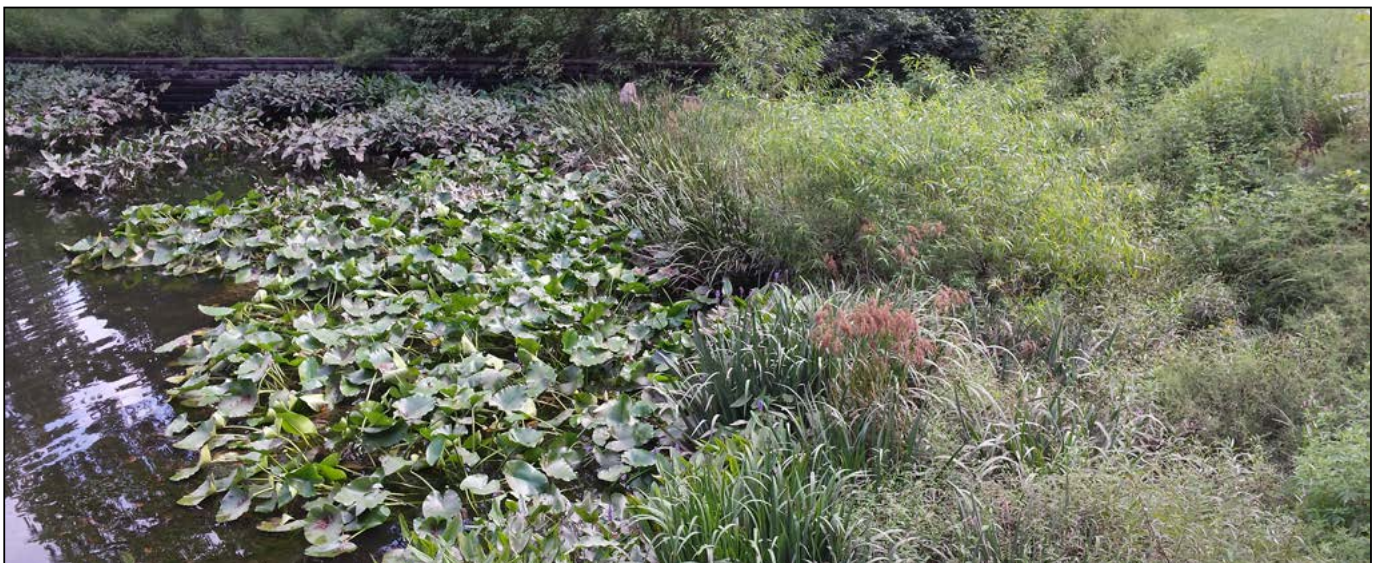
Pond bottom (dry ponds)

- Dry ponds may have channels or water flow paths through the middle that can be concrete, rock lined, or grass covered. Do not plant anything directly in the flow paths or channels.

- Many owners mow all sides and the bottom of the pond area multiple times throughout the growing season. If much of the pond bottom is turfgrass, group plants together to avoid impeding this mowing effort.

- Trees and shrubs can be planted in low areas that may flood during storms, but select plants that can tolerate being submerged for varying periods of time. Dry ponds frequently become clogged and it takes time for the water to exit.

- Fallen leaves must be removed in the fall and as they accumulate, so that they do not clog the control structure.

- Use trees that are small when they mature. Tall canopy trees are hard to remove when dredging or maintenance occurs, and their loss is more noticeable if they are removed.

Pond bottom (wet ponds)

In shallow areas, the bottom may be planted with submerged aquatic plants, the safety shelf (shallow bench that surrounds the deeper area of the pond to inhibit entry into the pond) may be planted with emergent aquatic plants, and the shoreline may be planted with sedges, grasses, and flowers.

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What types of plants should I use around existing stormwater management facilities?

Choose plants carefully to improve water quality, ensure the facility blends in with the overall landscape of the site, and provide wildlife habitat.

Specific site and environmental conditions should be considered to ensure that plants can survive, thrive, and function properly.

Conditions to consider when selecting plants

Site conditions	Notes
Water level	• Plants in dry ponds must be able to handle dry and wet conditions. • Plants in standing water in wet ponds should be adapted to the depth of the water. • Plants in the lowest points of dry ponds and edges of wet ponds should prefer moist soil and wet roots. • Plants placed along the sides of the pond should prefer average to dry soil conditions.
Slopes (not including dam embankment)	• Slopes must be stabilized. • Do not plant trees on slopes steeper than 3:1.
Amount of sun or shade	• Consider whether the plants require full sun, partial shade, or full shade. • The plants will receive morning sun from the east, afternoon sun from the west, full sun from the south, and full shade on the north side. Remember that trees and buildings cast shade.
Salt during winter	• Select plants with high salt tolerances if your pond is near a driveway or road that is heavily salted in the winter. Salt may cause the most damage around inlets where water enters into the pond. Native plant guides often list salt tolerances for plants.

Planting on a limited budget?

• Plant trees and shrubs around the perimeter of wet ponds, wetland areas, or wet channels to help reduce impacts to the water temperature.

• Plant trees and shrubs in locations that enhance (or block) views to or from nearby homes, apartments, driveways, or roads.

• Plant dense vegetation close to the water's edge to discourage geese.

• Take advantage of funding support. Visit rainscapes.org, TreeMontgomery.org and trees.maryland.gov.

Select native plants to encourage aquatic habitats

Aquatic plants filter out pollutants; produce oxygen; and provide food, shelter, and breeding sites for fish, amphibians, pollinators, birds, and mammals. Vegetative buffers around stormwater management facilities prevent shoreline soil erosion, prevent herbicides and pesticides from entering the pond, and provide habitat for a variety of wildlife. Buffers can extend into the pond using emergent wetland plants.

Native plants such as viburnum (above) and serviceberry (below) will help your pond site blend well into the surrounding natural environment.

A planted buffer zone along the pond's edge can discourage geese and reduce nutrient flow into the pond, which helps to eliminate algae blooms and mosquito breeding.

Design plantings to enhance habitat

A well-functioning wet pond or constructed wetland maintains a healthy, living ecosystem. It supports a diverse population of fish and other aquatic animals such as birds, bats, and amphibians; maintains water with adequate and stable levels of oxygen; has stable banks; and is surrounded by adequate plant cover. Buffers discourage geese (that prefer open shorelines) and trap nutrients from fertilizer, pathogens from animal droppings, and toxins from pesticides.

Prevent mosquitoes

Native plants attract wildlife such as dragonflies that are natural predators of mosquitoes. Pesticides, fertilizers, and goose droppings can lead to algae blooms and kill submerged aquatic vegetation, which can increase mosquito breeding in ponds. A pond with a healthy ecosystem will naturally reduce or eliminate mosquito larvae.

Floating islands

A floating island of plants can help beautify your pond and absorb pollution from stormwater runoff, reducing algae problems. The roots provide a biological haven for diverse communities of beneficial microorganisms, and bacteria colonies growing on the roots clean the water of nutrients, suspended solids, and some heavy metals. These same nutrients provide the food source that the plants need for growth. The result is a "concentrated wetland" effect. These islands are usually anchored in place.

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Many native plants adapt well to pond conditions. Listed below are just some of the plant species you might consider for stormwater ponds in Montgomery County.

Selecting plants

When possible, choose native plants that have adapted to the local climate, rainfall, and soil conditions. For plant selection, visit:

Native Plants for Wildlife Habitat and Conservation Landscaping: Chesapeake Bay Watershed
http://www.nps.gov/plants/pubs/chesapeake/

The National Park Service's "Plant Lists for Maryland Regions"
http://www.nps.gov/plants/pubs/nativesMD/lists.htm

Plants for wet edges:

Trees
Acer rubrum (Red maple)
Platanus (American sycamore)
Salix (Willow)
Taxodium (Bald cypress)

Shrubs
Cephalanthus (Buttonbush)
Cornus amomum (Silky dogwood)

Grasses and Flowers
Asclepias incarnata (Swamp milkweed)
Carex (Tussock, lurid, fox, and other wet sedges)
Eupatorium dubium or purpureum (Joe-Pye weed)
Hibiscus moscheutos (Swamp rose mallow)
Iris versicolor (Blueflag)
Juncus (Rush)

Plants for shallow water:

Grasses and Flowers
Iris versicolor (Blueflag)
Peltandra virginica (Arrow alum)
Pontederia cordata (Pickerelweed)
Sagittaria latifolia (Arrowhead)
Scirpus (Bulrushes)
Sparginium (American burreed)

Plants for dry pond bottoms (can tolerate temporary flooding):

Trees
Alnus (Alder)
Amelanchier (Serviceberry)
Betula nigra (River birch)
Magnolia virginiana (Swamp magnolia)
Salix nigra (Black willow)

Shrubs
Aronia/Photina (Chokeberry)
Cephalanthus (Buttonbush)
Ilex verticillata (Winterberry)
Sambucus canadensis (Elderberry)
Viburnum dentatum or nudum (Arrowwood viburnum and others)

Grasses and Flowers
Iris versicolor (Blueflag)
Eupatorium dubium or purpureum (Joe-Pye weed)
Juncus (Rush)
Panicum (Switchgrass)
Schizachyrium (Little bluestem)

Plants for pond slopes (mostly dry conditions):

Trees
Amelanchier (Serviceberry)
Betula nigra (River birch)
Cercis (Redbud)
Quercus phellos (Willow oak)
Juniperus virginiana (Eastern red-cedar)

Shrubs
Clethra (Summersweet)
Itea (Virginia sweetspire)
Vaccinium (Blueberries)
Viburnum acerfolium (Mapleleaf viburnum and others)

Grasses and Flowers
Deschampia (Hairgrass)
Echinacea (Coneflower)
Panicum (Switchgrass)
Rudbeckia (Black-eyed Susans)
Schizachyrium (Little bluestem)

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Choose the correct sizes

Planting a healthy size plant will increase survival. Use the following guidelines:

Trees: minimum of 1.5-inch caliper (the trunk is 1.5 inches thick measured 5 feet above the base of the tree in the pot)

Shrubs: minimum of 3-gallon size (a container holding about 3 gallons of soil and the roots)

Herbaceous plants: 1 gallon, quarts, or plugs, depending on plant density, growing season remaining, and watering regime

Do not use seed in areas that may flood—seed can wash away.

When should I plant?

Plants will survive best when planted in these time frames:

Trees and shrubs: Plant between September 15 and April 30.

Perennials and grasses:

• Plant late summer or fall-flowering plants in the spring.

• Plant spring-flowering plants in late summer or early fall.

Where to buy native plants:

Ask for native plants at your local nursery.

The Maryland Native Plant Society lists native plant nurseries in the area:
http://www.mdflora.org/publications/nurseries.html.

The Virginia Native Plant Society lists native plant nurseries in the area:
http://vnps.org/?s=nurseries.

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Protect plants from deer and beavers

Fence or cage your trees and shrubs to protect them from deer and beaver damage. Cages should be made of mesh (heavy-grade wire is preferred but plastics will work), held upright with at least two stakes, and securely fastened to the ground with at least three long sod stakes.

For trees more than eight feet tall, cages should be at least four feet tall and wide enough to encompass the trunk. For shorter trees and shrubs, cages should be at least one foot away from the widest branches. Fencing can be installed around large areas and clusters of trees and shrubs.

More information on protecting plants from deer: http://www.dnr.state.md.us/wildlife/Hunt_Trap/deer/deer_damage/ddmtexclude.asp

More information on protecting trees from beavers: http://www. montgomeryparks.org/PPSD/Natural_Resources_Stewardship/Living_with_ wildlife/beavers/Beaver_Index.shtm#Problems

Tree protection using heavy grade wire.

Protect wetland plants from geese and ducks

Waterfowl enjoy eating certain wetland plants. To avoid having birds destroy plants and prevent pollutants from their droppings in the pond, discourage them from entering the pond by planting vegetative buffers around the shoreline.

Planting trees and shrubs around the pond, planting taller grass species, and limiting mowing to once or twice a year in an area adjacent to the shoreline of the pond will help limit use of the pond by some waterfowl.
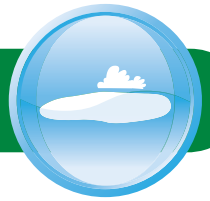
Remove invasive species

For more information, visit Plant Invaders of Mid-Atlantic Natural Areas at http://www.nps.gov/plants/alien/pubs/midatlantic

Mile-a-minute *(Persicaria perfoliata)* is a fast growing invasive plant.

A successfully planted pond

By following the guidelines in this document, and with regular maintenance, your planted pond may look like this.

Photo enhanced image

Maintenance Tips

• Trash and debris may become more entwined in vegetation. Remove trash and debris regularly.

• Keep flow paths, dams and areas around structures mowed.

• Remove leaves and mowing debris regularly.

• Remove weeds from planted areas regularly.

Need more help or have additional questions? DEP can answer your questions and provide additional guidance on planting your pond. Please email us at **AskDEP@montgomerycountymd.gov**, call the Montgomery County Customer Service Center at **3-1-1**, or visit **www.montgomerycountymd.gov/stormwater**.

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